Electrolux Distriparts

SERVICE MANUAL

HOBS

Repair-Instruction for induction hobs

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1 General Information

These instructions serve the repairing of autarkic cooking hobs and cooking hobs in combination with an oven with 3 or 4 inductions cooking zones respectively of the type E.G.O.. Also includes hobs with 2 induction zones (Domino, Mixed, Mixed gas) and the Frontline appliance series.

Please search for the corresponding alarm
symptom and then go through the alarm remedy measures from top to bottom.
Information concerning the replacement of parts is to be found in the corresponding replacement instructions or are included with the spare parts.

All work is only to be carried out on the induction modules and the heating elements are only to be carried out after they have been disconnected.

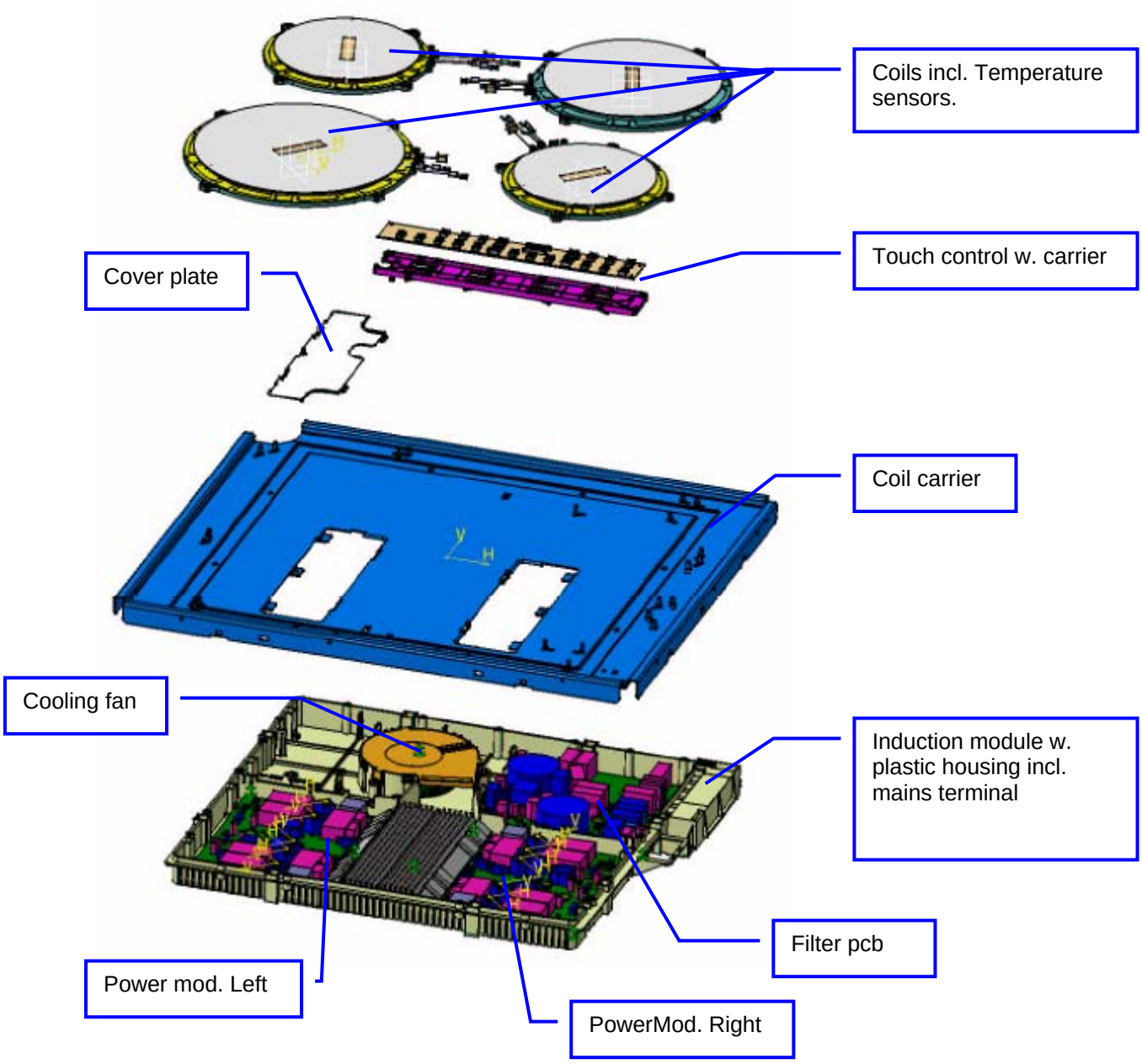
1.1 Leak current

A leak current of 5mA is normal and is therefore much higher than with other appliances.

1.2 Standby

The Standby power consumption amounts to < 1W (Induction plus user interface in the autonomous, exception Frontline up to 2W).
The µprocessor for the measuring of the coil temperature is deactivated in standby, i.e. should the cooking hob be heated up to hot pan being on the zone, no heating display "H“ is displayed when switched off.
In this condition, the ventilator is also not switched on by external heating.

1.3 Block Diagram/Hob elements



2 Alarm Symptoms

2.1 Appliance not functioning at all, cannot be switched on

References e.g. **(1)** refer to the illustrations in Chapter 2.8

Alarm Symptom	*Cooking Hob Display*	*Possible Alarm Cause*	*Alarm Remedying*
House fuse triggered	None	Incorrect connection at the power connection terminal.	**(1)** Test the pin assignment and 230VAC between N and the phases on the supply line.
		Final induction phase defect.	See chapter 3 Testing Power Component
Cooking field cannot be switched on. Normally no "pips" approx. 4 sec. after mains voltage is applied respectively no quick flashing up of the display in the cooking zone with not self-sufficient cooking zones or front line appliances.	None	Electronic system no longer reacts	Disconnect the appliance from the mains using the house fuse, reactivate after approx. 10 sec..
		No mains voltage or incorrect connection (1 phase missing ->no control voltage; N not connected to terminal 4 and 5 not connected)	**(1)** Test the pin assignment and 230VAC between 4 N and the 2 phases on supply line terminals 1 and 2. Both of the "N"s should be connected to terminals 4 + 5, if appr. jumper.
		No 5VDC betw. Pin 1 + 3 of the Bus for the Touch Control	**(2)** Test 1+3 5VDC on the underside of the cooking field (corresponds with the external lines of the bus between filter and Touch Control), if not applied, replace the Filterboard. Caution: this is difficult to test from underneath using normal test probes!
		Connector of the cable to the Touch Control / Display not inserted.	**(3)** Test connector at the filter and Touch Control. Reapply the mains voltage.
		Fuse strip conductor burnt out and/or final induction phase defect	See chapter 3 "Check power section"'
		Touch control/display defect.	If 5VDC exist and power component already replaced: replace Touch Control, ensure that the Touch Control is applied to the glass.
Every 5-10 sec "beep" of touch control	None	N not connected to terminal 4 or 5.	**(1)** Test the pin assignment and 230VAC between 4 N and the 2 phases on supply line terminals 1 and 2. Both of the "N"s should be connected to terminals 4 + 5, if appr. jumper.
Only Frontline appliances: cooking zone can not be activated. Display fully on for more than 5 sec.	All indications ON	Flat band cable between user interface and glass (touch keyboard) not plugged correctly.	Check line for seat and correct position (contact direction), see capter "References Frontline"

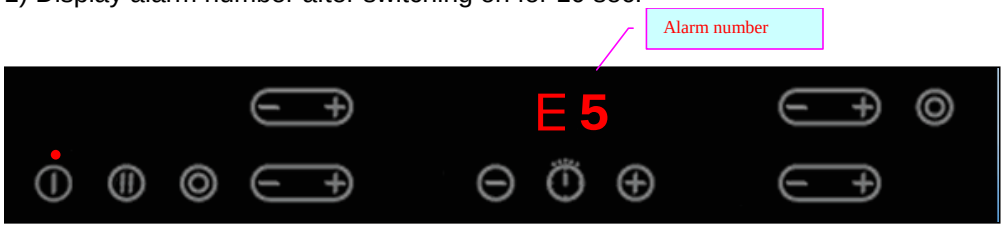
2.2 Individual cooking zones do not work (partially) or work incorrectly or cannot be used

Alarm Symptom	Cooking Hob Display	Possible Alarm Cause	Alarm Remedying
Pan does not heat up.	Normal cooking phase	Pan in the border area of the pan detection and only works with low power	Use different pot or this pot on a smaller hob. See Chapter 4 Pot Detection Information
	Flashing "F“	Pan not detected.	Check whether the pots or pans are suitable for induction. See 4 Pot Detection Information
		Coil not correctly connected.	Check whether the coil lines are connected and the torque has been adhered to.
		Distance between coil and glass ceramic too large.	Check whether the coil is applied to the glass ceramic and whether the glass was pushed was pushed down when screwing in position.
Display "F" with 2 hobs with all pots (also 1 hob with 3 hob models)	Flashing "F“	1 phase missing ; only possible with induction SW.Ver. 0.50.	**(1)** Test the pin assignment and 230VAC between 4 N and the 2 phases on supply line terminals 1 and 2. Both of the "N“s should be connected to terminals 4 + 5, if appr. jumper.
			Should the above not succeed, replace the affected power component..
No power on all hobs	Normal cooking phase	Demo mode activated.	See Chapter 5.2
Individual buttons cannot be used or cannot always be used.		Touch Control defect.	1) See Chapter 5. Touch Control Autarkic Cooking Hobs Information.. 2) Should this not help, replace Touch Control.
Cooking hob power too low or not provided for a longer duration.	Normal cooking phase	Incorrectly installed, exhaust not possible to the front.	**(4)** Change installation situation.
		Unsuitable pots (bottom bent)	See Chapter 4 Pot Detection Information
		Induction coil is not applied to the glass ceramic	Check whether the glass ceramic was pushed down when being screwed in position and the coil has been correctly positioned.
		Fan does not start.	1) When setting a cooking phase >0, the fan runs at a slow speed. If not, check the fan for foreign bodies, remove these where appropriate. 2) If necessary, replace fan. 3) Should this not succeed, replace power component.
"H" in display when cooking hob and oven cold and switched off.	"H“	Temperature sensor defect.	Replace corresponding coil with temperature sensor. Also see Instructions "E4“.

2.3 Alarm message "E“

When the appliance is switched on, "E“ / „xx“ Alarm Number is displayed in the timer display. With Frontline the display of the front zone indicates the error number when switching on. The affected zones are subsequently displayed with an "E" in the cooking phase display and are thereby disabled. The other zones can still be used.

example (left touch control / right indication in the cooking zone):
1) Display alarm number after switching on for 10 sec.



2) 2 zones are disabled.

Alarm Symptom	***Display in the Cooking Hob Timer***	***Possible Alarm Cause***	***Alarm Remedying***
Alarm display in the Touch Control display.	"E0“	Incorrect configuration on the Filterboard.	Disconnect cooking hob from mains, wait 10 sec and reconnect the mains supply. Should alarm still be displayed, replace filterboard..
	"E3“	Under voltage or over voltage, is only displayed for 10 sec. after voltage has been applied.	1) Disconnect cooking hobs from the mains, wait 10 sec. and reconnect the mains. 2) Should alarm still be displayed, test L1 against N (4), test L2 against N (5) at the mains connection **(1)**. 3) If OK, see See Chapter 3 Testing Power Component
	"E4“	Coil temperature sensor defect or not correctly connected.	1) **(5)**Inspecting the contacts on the power component. Is the connector inserted? 2) The resistance at room temperature (25°C) amounts to 1000 Ohm. This corresponds to approx. 3.3 Ohm per +1°C deviation. If not in this range, replace affected coil including temperature sensor. 3) Should above not succeed, replace power component concerned.

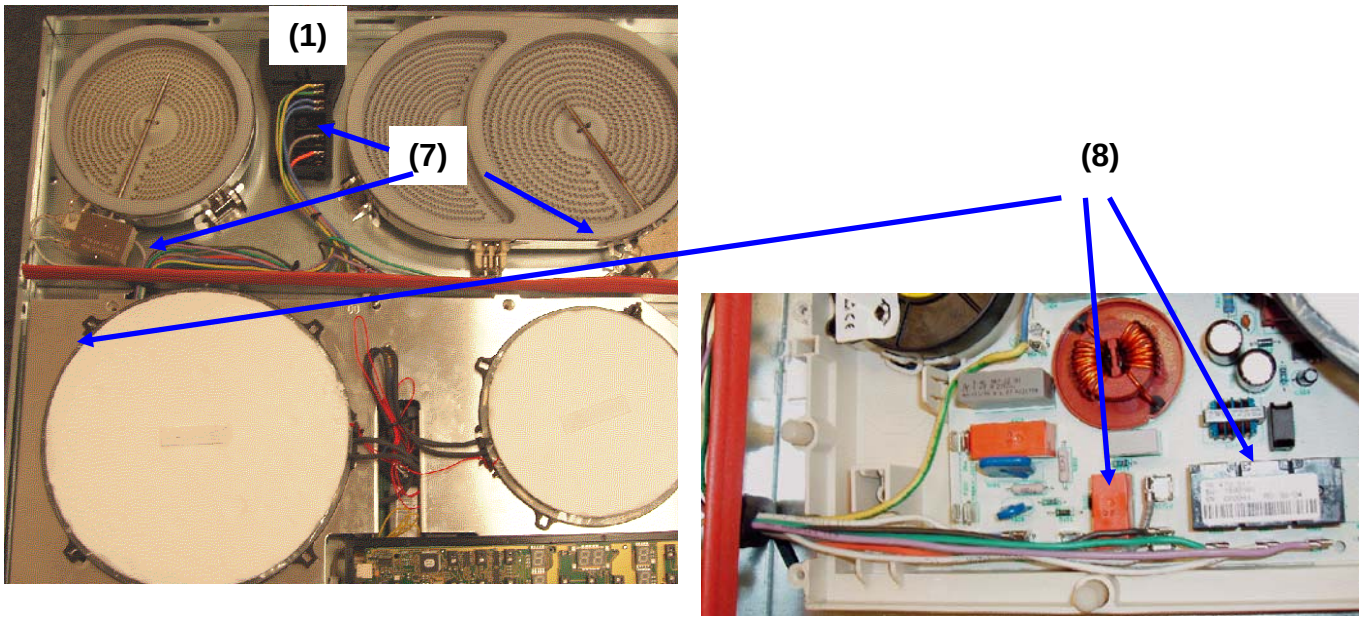
Alarm Symptom	***Display in the Cooking Field Timer***	***Possible Alarm Causes***	***Alarm Remedying***
Alarm display in the Touch Control	"E5“	1 phase missing	1) Check the house fuse. 2) Check the pin assignment, **(1)** test L1 against N (4), test L2 against N (5) 3) If ok, see Chapter 3.
	"E6“	Communication interference between filter and power component. or temp. Sensor is defective/missing Note: a norm requirement with regard to new powerboards results in the power supply for the electronics on the powerboard being deactivated in the case of a missing or incorrect temp. sensor value.	1) **(5)**Checking of the contact with the power element. Is the temp. Sensor connector locked in place or the dummy connector (3 zone appliances, no coil connected) inserted? 2) The resistance at room temperature (25°C) is 1000 Ohm.A deviation of +1°C corresponds to approx. +3.3 Ohm Replace the corresponding coil incl. Temperature sensor if not in this zone. 1) Check the cables between the two boards. **(6),** Reinsert connector. Or replace cable. 2) Should all of the zones on the cooking hob be affected (Display "E" in the cooking phase display), replace filter board . 3) Should the above not succeed, replace power component.
	"E7“	Alarm Temperature sensor heat sink power component	Replace affected power component.
	"E8“	Communication interference betw. filter and Touch Control. Central line at RAST2.5 connector / line defect.	1) **(3)** Inspect connector at filter and the Touch Control. Replace cable or filter and Touch Control. Reconnect mains voltage. 2) Should above not succeed, replace Touch Control. 3) Should above not succeed, replace Filter board.
	"E9“	Incorrect configuration for the Touch Control on the Filter board.	Disconnect cooking field from the mains. Wait 10 sec. and reconnect to the mains voltage. Should alarm still be displayed, replace Filter board.

2.4 Other alarm symptoms

Alarm symptoms	Display	Possible Alarm Cause	Alarm Remedying
Buzzer defect		Touch control defect.	Replace Touch Control.
Individual display elements do not illuminate or do not do so continuously.		Defective display elements	Replace Touch Control.
Penetrating aromas from the hob when warm.		Coils subjected to a manufacturing defect.	The aroma is non-toxic. Replace the affected coils. These also have a slight arom when cold. Clean the glass and aluminium sheet.
Pots cause noises		Unsuitable pots.	See Chapter 4 Pot Detection Information.
		Normal sound level	Interference noises result from the high working frequency of the induction. This can vary from pan to pan. When measured in operation pursuant to EN60335 §11-3 pursuant to EN60704 with 4 pots <47dBA. A pot with boiling water has approx. 60-62dBA.

2.5 Cooking zone with electric heating element not functioningt

Alarm symptoms	Possible Alarm Cause	Alarm Remedying
Cooking zone not functioning.	No phase 2 power voltage or wrong connection	**(1)** Check the pin configuration and 230V AC between N (4) and the phases at terminals 1 and 2.
	Electric heating element defect	**(7)** Check whether the electric heating element is open between the connections or whther it has short-circuited. Replace the heating element if defective.
	Relay defective	**8)** Check whether the rely is defective and whether no voltage is applied to the electric heating element. Also refer to the circuit diagram.
	If the above should not succeed.	Replace the filter module with the relay



2.5.1 Electric heating element relay instructions

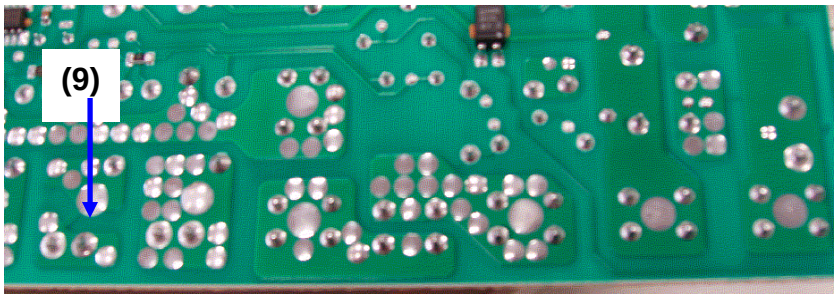
- Refer to the wiring diagram xxx.
  The electric heating element is pulsed on relay board HOC2000 in the cooker.
- Phase commutation with the cooker/hob combination, refer to Chapter 2.6, special error images for the cooker/hob combination.

2.6 Special error images for the cooker/hob combination

Peculiarities:

- Output
  L2 is not continuous and is only connected through when the right zone is switched through (D37 / D39, Details, refer to the wiring diagram).
- The display in the hob is supplied with 5V DC from the induction module.
- The electronic hob control in the cooker is supplied with 5V DC from the HOC2000 powerboard in the cooker.
- Mixed with the electric heating element:
  with the cooker/hob combination, the phases are normally connected to the
  L1 left cooking zone
  L2 right cooking zone

  The induction module (front left and right cooking zones) are however connected to the continuous phase L1.
  Therear right electric heating element zone is always connected to L2.
  L2 is only available however of one of the right cooking zones is switched on.
  In order to avoid an overloading of L1, the rear left zone is therefore operated with L1 (D29) or L2 (D37) if the front right zone is switched on.
  The phase commutation is executed with the assistance of relays K501 and K504
  A safety conductor strip **(9)** conductor strip of the K501 which can trigger a relay in case of an error occurring (e.g. contact stuck together).
  The output of the 210mm induction cooking zone is set to "P" if none of the right zones are switched on and the rear left zone is fully switched on, without this display being released.

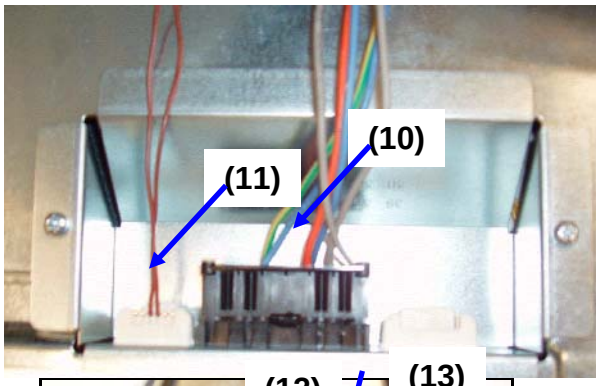


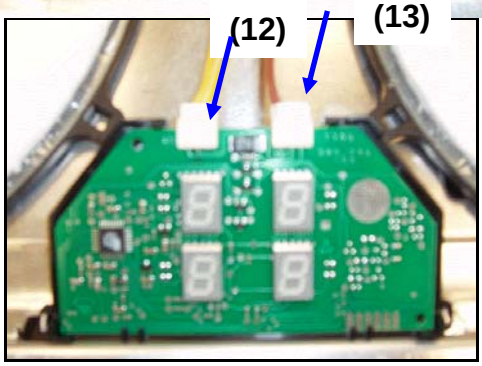
2.6.1 No display or error display on the cooking zone display on the cooker

Alarm symptoms	*Display*	*Possible Alarm Cause*	*Alarm Remedying*
Error display "E".	"E" if the display exists.		Errors in the cooking zone display in the cooker concern the hob. I.e. the same error number is displayed as in the hob display. For error displays, refer to Chapter 2.3. Error display "E".
When voltage is applied, the hob display illuminates briefly. But: no display at the cooker, no display at the hob, no output at the induction zones.		hob control in the cooker defective.	Additional instructions and tips concerning cooker problems are to be found in the Competence Service Manual Doc. No. xxx.

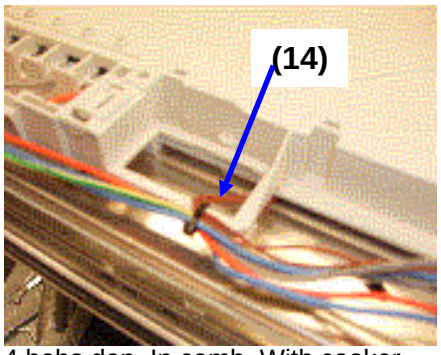
2.6.2 Cooking zone at the cooker okay, no display at the hob or no output.

Alarm symptoms	***Display***	***Possible Alarm Cause***	***Alarm Remedying***
The diplay in the hob does not illuminate when voltage is connected. Cooker display okay. But: no cooking stage display at the hob, no output at the induction zones.	None.	Output connector not inserted..	Check the connector (10) and the cable, check that it is correctly engaged.
		No cooker output.	Check pin D35 at the output connector to determine whether 230V AC voltage is connected.
		Communication connector not inserted or line damaged.	1) Checking the connection between cooker / hob (11). 2) Hereby also explicitly check the entrance point of the cable at the hob for damage (14). 3) Check the seat of the connector at the display in the hob (12) to the induction module or (13) to the cooker / external user interface, ditto induction module.
		No 5V DC betweem Pin 1+3 of the display bus	**(2)** check 5V DC Pin 1+3 on the underside of the hob. (corresponds to the our lines of the bus line from the filter to the display), if not connected, replace the filterboard. Caution: it is difficult to measure this from below with normal test probe!
		Display defect	Replace display
When voltage is applied, the hob display illuminates briefly. Display at cooker is okay. But: no output at the induction zones			See normal diagnosis chapter 2.2, individual induction cooking zones do not (temporarily) work or incorrectly or cannot be operated or see 2.3 chapter error display "E"

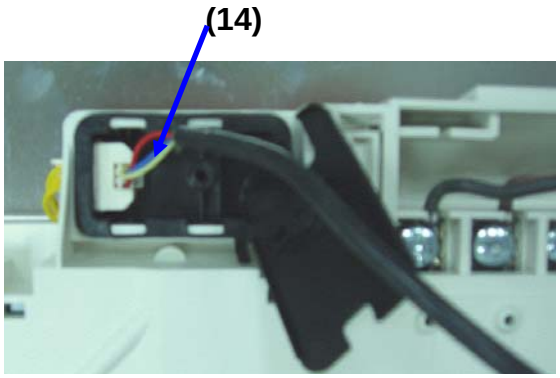




Display in the hob



4 hobs dep. In comb. With cooker



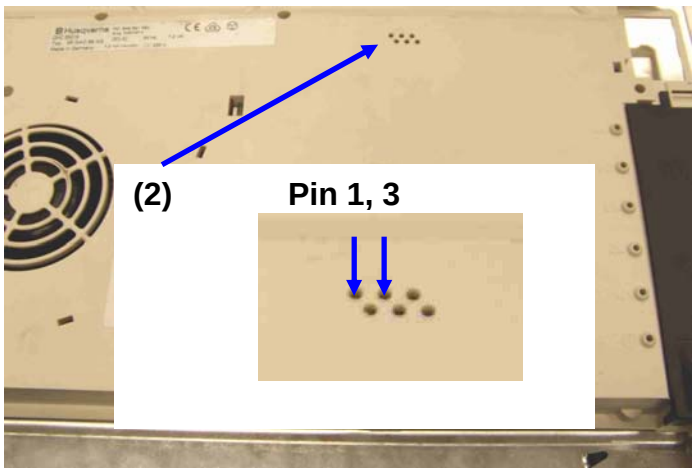
external user Interface

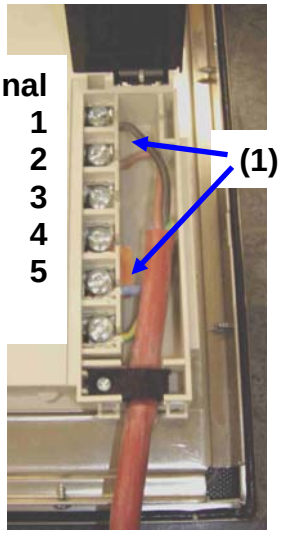
2.7 Unknown display

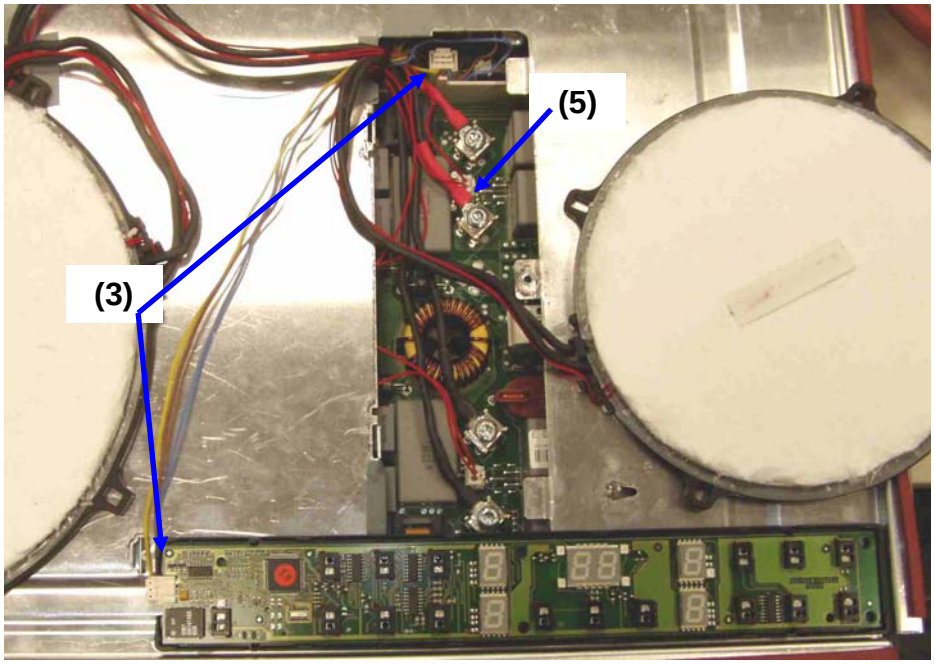
For details, refer to the cooking field instruction manual

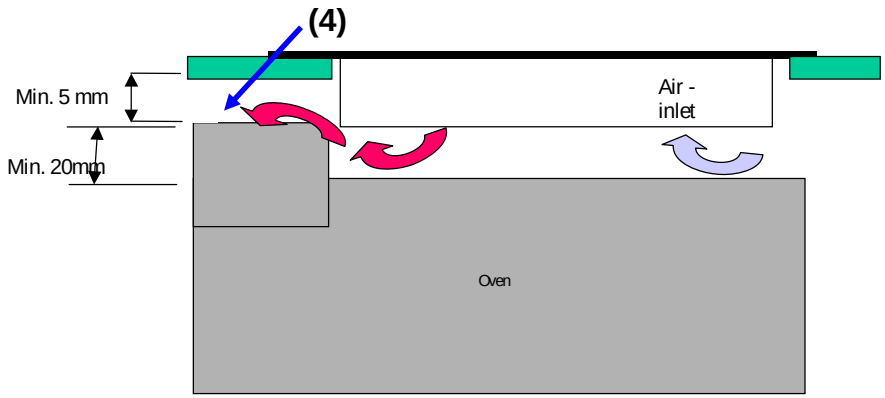
Symbol	Comment
„.“	Intermediate cooking levels („4.“)
„-“	Induction – zone switched off because of over temperature at the coil sensor (empty pot)
„A“	Fast heating up function („Ankochstoss“)
„E“	Alarm display siehe 2.3 Alarm message "E“
„F“	Pot detection – no pot detected
„H“	Residual heat indication
„L“	Lock – Function or key lock
„P“	Power (booster) function for induction
„◡“	Keeping warm

2.8 Control Point Illustrations









Remark: if there is no ventilation gap in the front it's still possible to operate the hob. Only with longer useage (>15 min.) the performance will drop. For Mixed hob this is e.g. – 20%, for full induction hobs it's higher.

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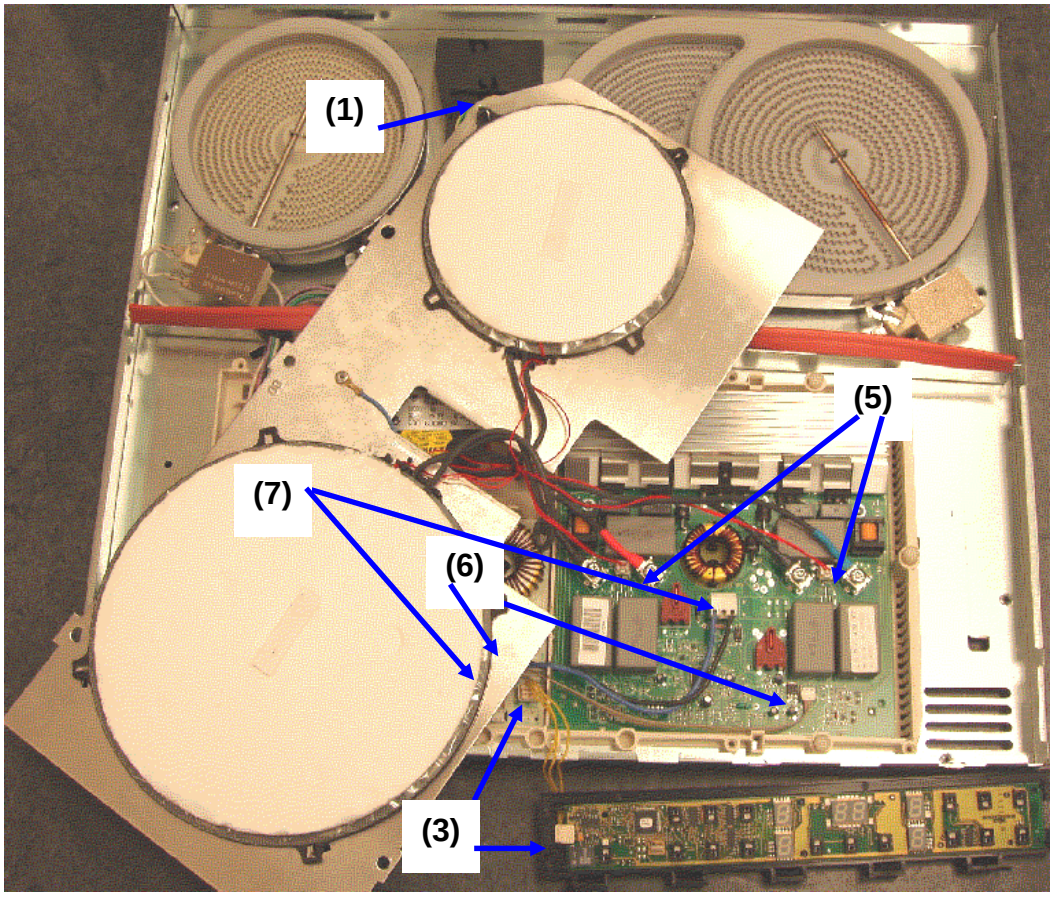
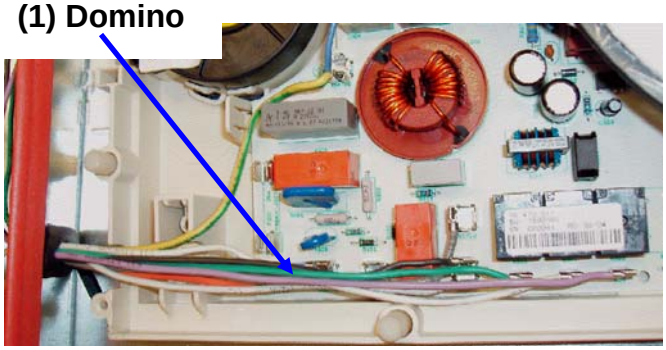
2.9 Images control point for 2 zones / Mixed Induction



Attention: mains connection for Domino is directly on filter pcb.

(1) Domino



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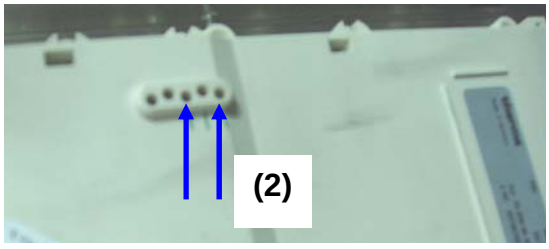


3 Testing Power Component

1. When alarm messages and disabled zones exist ("E“ in cooking phase display), please make a note of the power component which is affected.

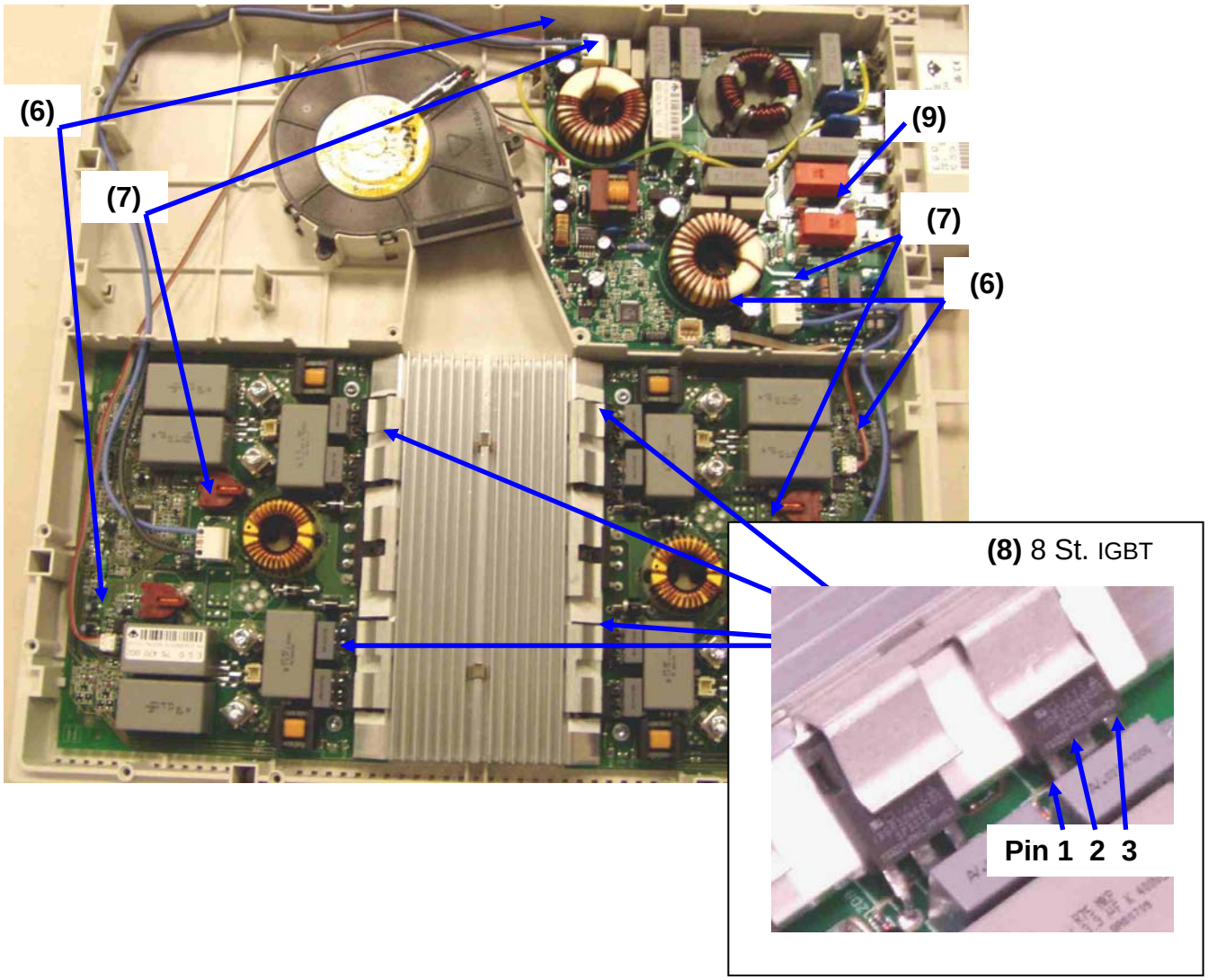
2. **(7)** Check whether the lead from the filter board is connected, also check the bus lines **(6)** µprocessors filter to power component.

3. If **(8)** IGBT has become shorted, this normally means that the IGBT housing is damaged. Replace power component

4. **(8)** Measure resistance at the IGBTs
   Pin1-Pin2 or Pin2-Pin3 >50kOhm → Okay
   <50Ohm → power component defect & replace
   Only replace the affected power component and **(9)** insert 20A fuse, completely separate the fuse strip conductor.
   S12 = right power component
   S11 = left power component

5. By a short-circuit and destroyed power component, it is imperative that the coil lines be inspected for signs of damage.

6. Also replace the filterboard should the replacement of the power component not succeed.



4 Pot Detection Information

Suitable pot materials:

- Steel enamel
- Stainless steel (with magnet. bottom)
- Aluminium (with magnet. bottom)
- Cast iron

Unsuitable materials:

- Aluminium (→ too much power)
- Copper
- Stainless steel (not magnetic)
- Glass
- Ceramic

The pot detection is designed for the following diameters:

Nominal burner ∅ [mm]	Minimum pot bottom ∅ instruction manual [mm]	Minimum pot bottom ∅ adjusted with steel plate [mm]
145	125	100
180	145	120
210	180	140
260	180	180

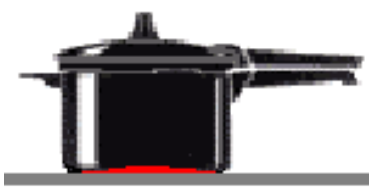
With regard to Ind. G4, the same diameter is stipulated in the instruction manuals as for the previous model. However, the real diameter which still functions is much smaller.
The performance for different pots can very by as much as +/- 10-15%.

- As reference pots, we recommend enamelled steel pots (e.g. Silit).
- 2-3 mm thick round steel plates in various diameters are very suitable for testing the pot detection function.
- Sandwich bottoms can cause very unpleasant noises if they are not correctly pressed. The same is the case with regard to handles which are a little loose.

- The bottom diameter of the pot is decisive and not the exterior diameter.

- With regard to stainless steel pots with sandwich bottoms, the diameter of the magnetic part of the pot bottom is decisive.

- an additional influencing factor is the vertical distance from the coil, i.e. an uneven sandwich bottom has a negative effect on the power consumption. The effect is exactly the same if the induction coil is not pressed on the glass ceramic.



5 Touch Control Autarkic Cooking Hobs Information

- The Touch Control works on the basis of the infrared principle, i.e. a signal is transmitted with a transmitter which is then reflected by the finger and received once more.

5.1 Instructions on the operation / possible operation errors if the buttons do not function:

- Do not use with the flat finger. Hold the finger relatively upright.
  Otherwise 2 buttons can be activated, this is not signalled.

- Please do not approach slowly, especially not from the side, it is better to approach the button faster.
  A signal change is above all evaluated.

- Applying excessive pressure to the cooking hob will not make a difference.
  It is better to release it for 5 sec. and then press the button again.

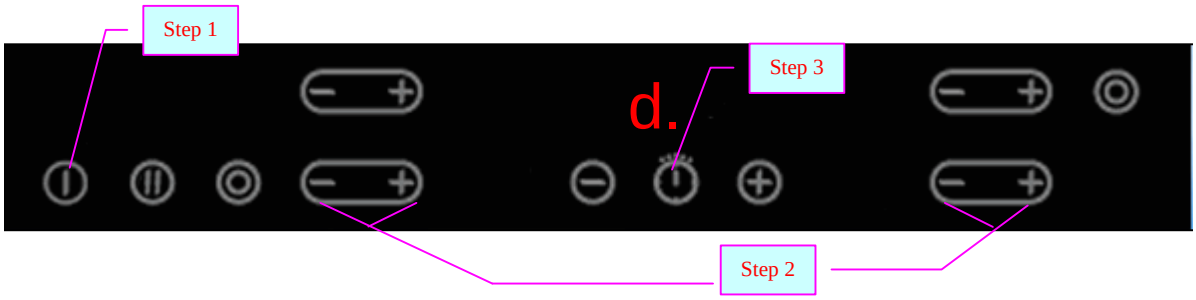
- If the adjustment of the cooking stage/timer does not continue after the button has been released, this is due to the fact that the Touch Control receives a "Button Pressed" signal even from a distance of some mm.
  If the user interface is not adjacent to the glass ceramic, the signal for the key evaluation is very much smaller and the keys can not be operated any more, i.e. pay always attention to intact plastic carriers.

- If the appliance switches off without that the glass ceramic has been touched, is this because a key in the extreme case.is switching even in a distance / height of 10 mm. This is the function principle of the touch control and is a normal behaviour. I.e. do not replace the touch control!

5.2 Demo mode / Self test (Service mode) / Alarm Menu

To enter the self-test/Demo mode, the following sequence of buttons must be pressed:

1. Hob is off. Press main switch continuously until display is going off (without beep).
2. Press the "+" and " -" buttons of the front zones together (->short beep) for about 3 seconds (-> again short beep)
3. Press the timer selection key



4. The display shows a "d" for demo mode.
   If you press the timer select key again you switch to “S” for Service mode, another press gets you to “E” the alarm menu.
5. By pressing the button "+" of a cooking zone you activate the menu.
   For example, status like above shown in the graphic – hob is in demo mode, press ‘+’ key of zone to deactivate the demo mode.

Demo Mode:
If demo mode is activated the display with the „d“ shows additionally a dot.
After selecting the demo mode, the electronic goes to off. Now it can be used like usual but only without heater activation. The deactivation of the demo mode is done in the same procedure as activating. After deactivating the demo mode the electronic must go off. Now the hob can be used in normal mode.

Service Mode “s”
Routine:
1. Test all LEDs / Displays for 10 Sec.
2. Show Software version Touch control for 10 Sec. in timer display
   In the 7-Segment Display for zone right front (zone 4) an “0” is displayed as an indication that it is step 0 – HUI.
3. Software display version power board.

Alarm Mode “E”
The last 5 stored alarm codes (if >o) are displayed like an actual alarm, each for 5 sec., starting with the oldest (read request ‘5’ Alarm code message) to the newest (read request ‘1’).

5.3 Product history

5.3.1 Change from automatic boost to manual boost

This change was done due to customer complaints. It was introduced in series production July2004.
The change is implemented with a modified configuration on the filter board of the induction.

5.3.2 Error appliance can not be operated, display indicates "0"

This error has been disappeared after a reset.
For that there were 2 fault reasons in the hardware and software, this was removed by SW Vers. 4.2 from Dec. 2004.

6 Frontline self-sufficient hobs

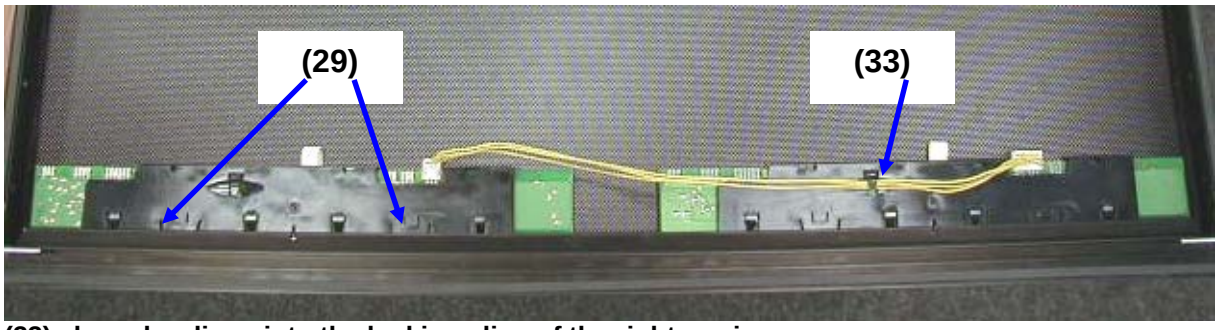
6.1 Special references disassembly/assembly in case of a service:

1. Disassemble appliance
   ➔ Remove tension clips

2. Open appliance
   ➔ Attention! Before disassembling the glass draw off the connecting line between the user interface at the glass and induction.

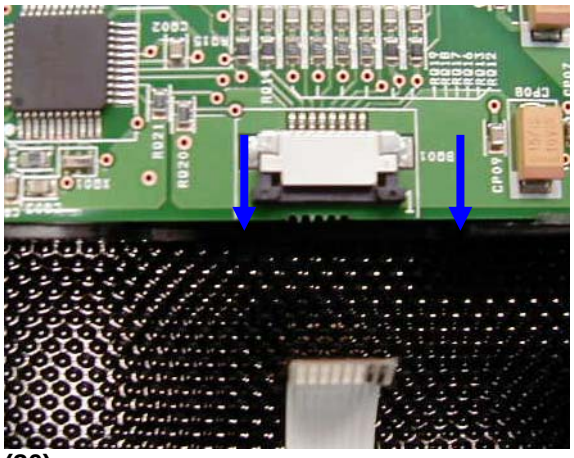
3. Replacement of display units
   ➔ By means of a coin loosen plastic carriers by pressing and turning (29)
   ➔ Shift back the plastic carrier until the front edge can be seen.
   ➔ Lay plastic carrier to the bottom side
   ➔ Remove locking bars like (30)
   ➔ Draw off flat band cable
   ➔ Replace electronic board
   ➔ Assemble in the same way. Pay absolute attention to the correct putting and locking of the band cable.

User interface and connection of two electronics at the glass ceramic (58 and 72 cm appliances)

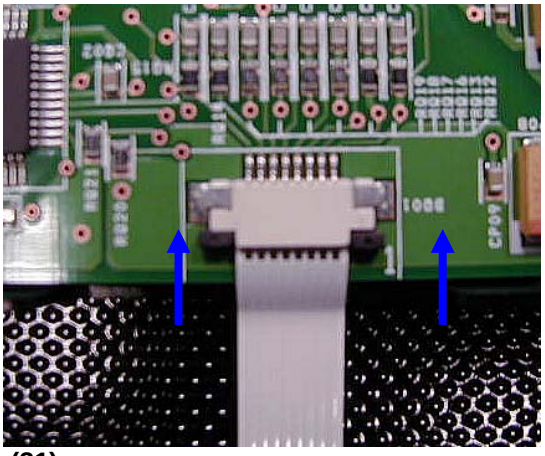


(33) clamp bradings into the locking clips of the right carrier.

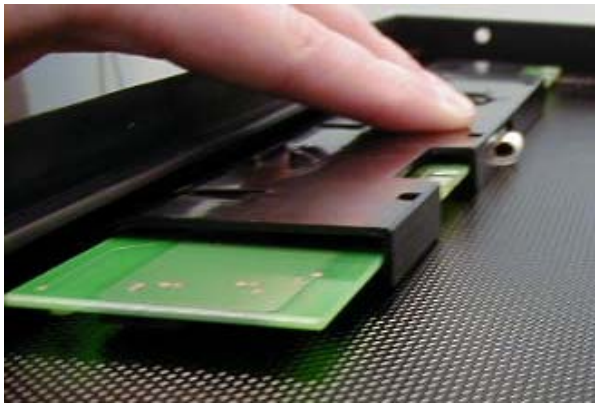
Assembly of band cable



(30)
Open locking (black bar)



(31)
Put band cable (silver contacts visible)
Close locking in arrow direction

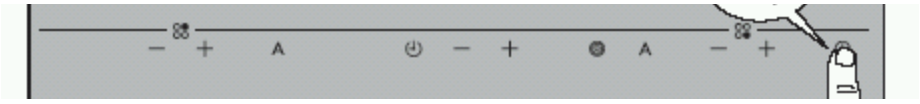


(32)
Turn down the electronic with displays onto the glass side, press the carrier flatly to the glass lower side and let it lock in. For assembly press the locking slightly to the bottom.

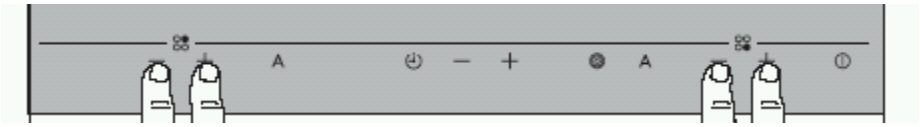
6.2 Demo mode / Self test

To enter the self-test/Demo mode, the following sequence of buttons must be pressed:

1. Hob is off. Press main switch continuously until display is going off.



2. Press the "+" and " -" buttons of the zones together (short beep) for about 3 seconds



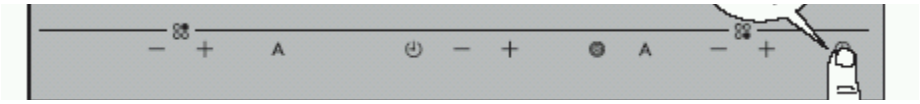
3. Then automatically the **software version** of the user interface is displayed, for example „2“ „8“ = version 28 and all LEDs / Displays are ON for 10 Sec. There is no alarm history mode available.

4. **Demo mode**
   By pressing the button "A" / „P“ of one of the rear cooking zone you activate the demo mode, the LED for Power function active is ON.
   With activation of the demo mode the hob can be used like usual but without heater activation.
   The deactivation of the demo mode is done in the same procedure as activating. The Led has to be off.

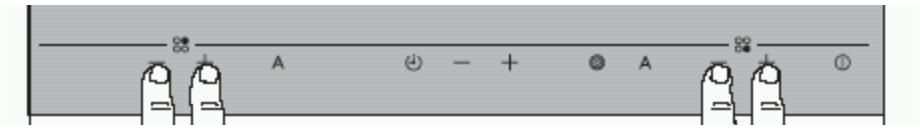
New Demo Mode/ Service Mode/ Alarm menu control philosophy starting with October 2007 production

To access the self-test/demo mode, press the buttons in the following order:

1. The cooking zone is switched off. Press the main switch until the display goes dark.



2. Press the "+" and "-" buttons of the zones (short beep) simultaneously for about 3 seconds.



3. After 3 seconds, a "d" for demo mode appears in the timer display or in the hot plate display (depending on the model).

You can change between demo mode "d", service mode "S" and alarm menu "E" using the timer button or "A" button (depending on the model). if you do not select anything, the unit will switch off.

Demo Mode „d“
Activation: Press the "+" button of the left-hand cooking zone
Indication in the timer display or in the cooking zones display (depending on the model): "do"
You can use the unit as usual, but without heater activation.

To be able to use the unit normally, you have to carry out the following steps:
- Repeat 1. to 3.; after 3 seconds, the timer display or the cooking zones display (depending on the model) indicates a "do".
- Deactivation: press the "+" button of the left-hand cooking zone
- Indication in the timer display or in the cooking zones display (depending on the model): "d"